

What is Claimed is:

- 1 1. An angled tissue cutting instrument comprising
2 an elongate outer member comprising an elongate body having a bend and a
3 forward end and a distal tip rotatably mounted to said forward end, said distal tip
4 including a central longitudinal axis and a cutting window having a directional position
5 radial to said central longitudinal axis, said distal tip and said body being selectively
6 rotatable relative to one another about said central longitudinal axis to move said cutting
7 window to a different directional position radial to said central longitudinal axis; and
8 an elongate inner member movably disposed within said outer member and
9 including a flexible region adjacent said bend and a cutting edge exposed from said
10 cutting window for cutting anatomical tissue when said inner member is moved relative
11 to and within said outer member.

- 1 2. The angled tissue cutting instrument recited in claim 1 wherein said inner
2 member is rotatably disposed within said outer member.

- 1 3. The angled tissue cutting instrument recited in claim 1 wherein said inner
2 member is removably disposed within said outer member.

- 1 4. The angled tissue cutting instrument recited in claim 1 wherein said
2 cutting window is movable to a plurality of directional positions located at 90° spaced
3 locations about said central longitudinal axis.

1 5. The angled tissue cutting instrument recited in claim 1 and further
2 comprising means for releasably locking said cutting window in each of said directional
3 positions.

1 6. The angled tissue cutting instrument recited in claim 5 wherein said distal
2 tip includes tip engagement structure and said body includes body engagement
3 structure selectively cooperatively interengageable with said tip engagement structure
4 to lock said cutting window in each of said directional positions.

1 7. The angled tissue cutting instrument recited in claim 6 wherein said tip
2 engagement structure includes at least one tip protrusion radial to said central
3 longitudinal axis and said body engagement structure includes a plurality of body slots
4 at radial locations about said central longitudinal axis, said at least one tip protrusion
5 being selectively cooperatively interengageable with said body slots, respectively, to
6 prevent relative rotation between said distal tip and said body about said central
7 longitudinal axis when said cutting window is in each of said directional positions.

1 8. The angled tissue cutting instrument recited in claim 7 wherein said tip
2 engagement structure includes a plurality of tip protrusions at radial locations about said
3 central longitudinal axis and a plurality of tip slots each located between a pair of
4 radially adjacent ones of said tip protrusions, and said body engagement structure
5 further includes a plurality of body protrusions each located between a pair of radially
6 adjacent ones of said body slots, said tip protrusions and said tip slots being selectively

7 cooperatively interengageable with said body slots and said body protrusions,
8 respectively, to prevent relative rotation between said distal tip and said body about
9 said central longitudinal axis when said cutting window is in each of said directional
10 positions.

1 9. The angled tissue cutting instrument recited in claim 6 wherein said tip
2 engagement structure includes at least one tip slot radial to said central longitudinal
3 axis and said body engagement structure includes a plurality of body protrusions at
4 radial locations about said central longitudinal axis, said at least one tip slot being
5 selectively cooperatively interengageable with said body protrusions, respectively, to
6 prevent relative rotation between said distal tip and said body about said central
7 longitudinal axis when said cutting window is in each of said directional positions.

1 10. The angled tissue cutting instrument recited in claim 1 wherein said bend
2 comprises a rigid bend formed in said body.

1 11. The angled tissue cutting instrument recited in claim 6 wherein said distal
2 tip comprises a back part and a front part assembled to said back part, said back part
3 comprising said tip engagement structure and said front part comprising said cutting
4 window.

1 12. The angled tissue cutting instrument recited in claim 6 wherein said distal
2 tip is formed integrally unitarily as one piece.

1 13. An angled tissue cutting instrument comprising
2 an elongate outer member including an elongate body having a bend and a
3 forward end and a distal tip mounted at said forward end, said distal tip including a
4 central longitudinal axis and a cutting window facing in a direction transverse to said
5 central longitudinal axis, said distal tip and said body being selectively rotatable relative
6 to one another about said central longitudinal axis to rotationally index said distal tip to
7 a plurality of rotational positions about said central longitudinal axis, said distal tip and
8 said body being selectively movable longitudinally relative to one another between a
9 longitudinally extended position for said outer member and a longitudinally retracted
10 position for said outer member, said distal tip being releasably locked in a selected one
11 of said rotational positions when said outer member is in said longitudinally extended
12 position, and being unlocked from said selected rotational position when said outer
13 member is in said longitudinally retracted position; and
14 an elongate inner member movably disposed within said outer member and
15 including a flexible region adjacent said bend and a cutting edge exposed from said
16 cutting window for cutting anatomical tissue when said inner member is moved relative
17 to and within said outer member.

1 14. The angled tissue cutting instrument recited in claim 13 wherein said body
2 includes a proximal length portion extending distally to said bend and a distal length
3 portion extending from said bend to said forward end, said distal length portion being
4 coaxial with said distal tip.

1 15. The angled tissue cutting instrument recited in claim 13 wherein said
2 rotational positions are equally spaced about said central longitudinal axis.

1 16. The angled tissue cutting instrument recited in claim 15 wherein said
2 cutting window has a plurality of directional positions about said central longitudinal axis
3 corresponding to said rotational positions, respectively.

1 17. The angled tissue cutting instrument recited in claim 13 wherein said bend
2 is rigid and said inner member is rotatably disposed within said outer member.

1 18. The angled tissue cutting instrument recited in claim 13 and further
2 comprising tip engagement structure on said distal tip and body engagement structure
3 on said body, said body engagement structure being cooperatively interengaged with
4 said tip engagement structure when said outer member is in said longitudinally
5 extended position to prevent relative rotation between said distal tip and said body
6 about said central longitudinal axis and being disengaged from said tip engagement
7 structure when said outer member is in said longitudinally retracted position to permit
8 relative rotation between said distal tip and said body about said central longitudinal
9 axis.

1 19. The angled tissue cutting instrument recited in claim 18 wherein said tip
2 engagement structure and said body engagement structure are located at 90° spaced
3 radial locations about said central longitudinal axis.

1 20. The angled tissue cutting instrument recited in claim 18 wherein said
2 distal tip includes a rearward end slidably disposed in a forward end of said body.

1 21. The angled tissue cutting instrument recited in claim 20 wherein said
2 distal tip is formed monolithically as a single part.

1 22. The angled tissue cutting instrument recited in claim 20 wherein said tip
2 engagement structure is formed on a back part of said distal tip and said cutting window
3 is formed in a front part of said distal tip, said front part having a rearward end fixedly
4 secured in a forward end of said back part, said back part having a rearward end
5 defining said rearward end of said distal tip.

1 23. An angled tissue cutting instrument comprising
2 an elongate outer member including an elongate body having a proximal end, a
3 forward end and a bend between said proximal end and said forward end, and a distal
4 tip mounted to said forward end, said distal tip having a central longitudinal axis and a
5 cutting window facing transverse to said central longitudinal axis, said distal tip and said
6 body being selectively rotatable relative to one another about said central longitudinal
7 axis to locate said distal tip at a plurality of rotational positions about said central
8 longitudinal axis;

9 an elongate inner member rotatably disposed within said outer member and
10 having a maximum insertion distance within said outer member wherein a cutting edge
11 of the inner member is exposed from said cutting window for cutting anatomical tissue

12 when said inner member is rotated relative to and within said outer member, said inner
13 member being movable proximally from said maximum insertion distance, said distal tip
14 being locked in one of said rotational positions when said inner member is disposed
15 said maximum insertion distance within said outer member and being unlocked from
16 said one of said rotational positions when said inner member is moved proximally from
17 said maximum insertion distance.

1 24. The angled tissue cutting instrument recited in claim 23 wherein said
2 distal tip and said body are movable longitudinally relative to one another between a
3 longitudinally extended position for said outer member and a longitudinally retracted
4 position for said outer member, said distal tip and said body being prevented from
5 rotating relative to one another about said central longitudinal axis in said longitudinally
6 extended position and being permitted to rotate relative to one another about said
7 central longitudinal axis in said longitudinally retracted position, said outer member
8 being maintained in said longitudinally extended position in response to said inner
9 member being disposed said maximum insertion distance within said outer member
10 and being movable to said longitudinally retracted position in response to said inner
11 member being moved proximally from said maximum insertion distance.

1 25. The angled tissue cutting instrument recited in claim 24 wherein said
2 distal tip is maximally extended distally from said body in said longitudinally extended
3 position and is retracted proximally relative to said body in said longitudinally retracted
4 position.

1 26. The angled tissue cutting instrument recited in claim 24 wherein said
2 distal tip includes tip engagement structure and said body includes body engagement
3 structure engaged with said tip engagement structure to prevent relative rotation
4 between said distal tip and said body about said central longitudinal axis in said
5 longitudinally extended position and disengaged from said tip engagement structure to
6 permit relative rotation between said distal tip and said body about said central
7 longitudinal axis in said longitudinally retracted position.

1 27. The angled tissue cutting instrument recited in claim 23 wherein said
2 distal tip includes tip engagement structure and said body includes body engagement
3 structure engaged with said tip engagement structure when said inner member is
4 disposed in said outer member said maximum insertion distance to prevent relative
5 rotation between said distal tip and said body about said central longitudinal axis and
6 disengaged from said tip engagement structure when said inner member is moved
7 proximally from said maximum insertion distance to permit relative rotation between
8 said distal tip and said body about said central longitudinal axis.

1 28. The angled tissue cutting instrument recited in claim 23 wherein said inner
2 member includes a proximal end and further including a handpiece connectible to said
3 proximal end of said outer member and said proximal end of said inner member to
4 secure said inner member within said outer member said maximum insertion distance.

1 29. An indexing tool for an angled tissue cutting instrument having an inner
2 member disposed in an outer member including an elongate body and a distal tip
3 having a cutting window, comprising
4 a retention element having a central longitudinal axis and a socket for removably
5 receiving the distal tip of the outer member of the angled tissue cutting instrument, said
6 socket having a configuration to mate with an external configuration of the distal tip
7 when the distal tip is in an insertion orientation relative to said socket;
8 external indicia alignable with the cutting window of the distal tip to obtain the
9 insertion orientation for the distal tip relative to said socket; and
10 a handle extending from said retention element, said handle being movable to
11 move said retention element longitudinally along said central longitudinal axis to apply
12 axial force to the distal tip received in said socket by which the distal tip is retracted
13 proximally relative to the elongate body and to move said retention element rotationally
14 about said central longitudinal axis to apply rotational force to the retracted distal tip
15 received in said socket by which the distal tip is rotated relative to the elongate body.

1 30. The indexing tool recited in claim 29 wherein said indicia is located on
2 said retention element radial to said central longitudinal axis.

1 31. The indexing tool recited in claim 30 wherein said indicia comprises an
2 arrow extending parallel to said central longitudinal axis.

1 32. The indexing tool recited in claim 29 wherein said configuration of said
2 socket mates with the external configuration of the distal tip with said central
3 longitudinal axis of said retention element coaxially aligned with a central longitudinal
4 axis of the distal tip.

1 33. The indexing tool recited in claim 31 wherein said arrow is raised from an
2 external surface of said retention element.

1 34. An angled tissue cutting instrument kit comprising
2 an angled tissue cutting instrument including an elongate outer member and an
3 elongate inner member movably disposed in said outer member, said outer member
4 comprising an elongate body having a bend and a forward end and a distal tip mounted
5 on said forward end, said distal tip having a central longitudinal axis and a cutting
6 window radial to said central longitudinal axis, said distal tip being movable
7 longitudinally relative to said elongate body from a longitudinally extended position to a
8 longitudinally retracted position in response to axial force on said distal tip, said distal
9 tip being rotatable relative to said elongate body about said central longitudinal axis in
10 said longitudinally retracted position to adjust the radial position of said cutting window
11 about said central longitudinal axis in response to rotational force on said distal tip, said
12 distal tip being prevented from rotating relative to said elongate body about said central
13 longitudinal axis in said longitudinally extended position to lock said cutting window in a
14 selected radial position about said central longitudinal axis; and

15 an indexing tool comprising a retention element having a socket for removably
16 receiving said distal tip and a handle extending from said retention element, said
17 indexing tool being movable via said handle to apply said axial force and said rotational
18 forces on said distal tip.

1 35. The angled tissue cutting instrument kit recited in claim 34 wherein said
2 distal tip has an external configuration and said socket has a configuration to mate with
3 said external configuration of said distal tip.

1 36. The angled tissue cutting instrument kit recited in claim 35 wherein said
2 distal tip mates with said socket when said distal tip is in an insertion orientation relative
3 to said socket and does not mate with said socket when said distal tip is not in said
4 insertion orientation.

1 37. The angled tissue cutting instrument kit recited in claim 36 wherein said
2 indexing tool further comprises external indicia and said insertion orientation
3 corresponds to alignment of said cutting window with said indicia.

1 38. The angled tissue cutting instrument kit recited in claim 37 wherein said
2 retention element has a central longitudinal axis, said distal tip mates with said socket
3 with said longitudinal axis of said distal tip coaxial with said central longitudinal axis of
4 said retention element, and said indicia is disposed on said retention element radial to
5 said central longitudinal axis of said retention element.

1 39. The angled tissue cutting instrument kit recited in claim 38 wherein said
2 retention element comprises an arrow parallel to said central longitudinal axis of said
3 retention element.

1 40. The angled tissue cutting instrument kit recited in claim 34 wherein said
2 retention element and said handle are formed monolithically as a single component.

1 41. The angled tissue cutting instrument kit recited in claim 34 wherein said
2 cutting window is angled relative to said central longitudinal axis of said distal tip and
3 said socket is partly defined by an angled internal surface of said retention element
4 having an angle corresponding to the angle of said cutting window.

1 42. The angled tissue cutting instrument kit recited in claim 41 wherein said
2 retention element includes a central longitudinal axis, said angled internal surface is
3 radial to said central longitudinal axis of said retention element and said retention
4 element further comprises external indicia radially aligned with said angled internal
5 surface.

1 43. A method of variably positioning a cutting window of an angled tissue
2 cutting instrument, comprising the steps of
3 grasping an outer member of the angled tissue cutting instrument comprising an
4 elongate body and a distal tip mounted at a forward end of the body;

5 effecting relative rotation between the distal tip and the body about a central
6 longitudinal axis of the distal tip with the outer member in a longitudinally retracted
7 position to move a cutting window of the distal tip to a selected directional position
8 about the central longitudinal axis;
9 advancing an inner member of the angled tissue cutting instrument distally within
10 the outer member with the cutting window in the selected directional position to move
11 the outer member from the longitudinally retracted position to a longitudinally extended
12 position;
13 preventing relative rotation between the distal tip and the body about the central
14 longitudinal axis in response to said step of advancing; and
15 securing the outer and inner members to maintain the outer member in the
16 longitudinally extended position such that the cutting window is locked in the selected
17 directional position.

1 44. The method of variably positioning recited in claim 43 wherein said step of
2 effecting includes longitudinally aligning tip engagement structure on the distal tip with
3 body engagement structure on the body when the cutting window is in the selected
4 directional position and said step of preventing includes engaging the tip engagement
5 structure with the body engagement structure.

1 45. The method of variably positioning recited in claim 44 wherein said step of
2 aligning includes aligning tip engagement structure comprising a plurality of tip
3 protrusions on the distal tip with body engagement structure comprising a plurality of

4 body slots in the forward end of the body and said step of engaging includes engaging
5 the tip protrusions in the body slots.

1 46. The method of variably positioning recited in claim 43 wherein said step of
2 advancing includes extending the distal tip longitudinally distally from the forward end of
3 the body in the longitudinally extended position.

1 47. The method of variably positioning recited in claim 43 wherein said step of
2 advancing includes advancing the inner member distally a maximum insertion distance
3 in the outer member.

1 48. The method of variably positioning recited in claim 43 wherein said step of
2 advancing includes exposing a cutting edge of the inner member from the cutting
3 window.

1 49. The method of variably positioning recited in claim 47 wherein said step
2 of advancing includes positioning a flexible region of the inner member within a rigid
3 bend of the body.

1 50. The method of variably positioning recited in claim 49 wherein said step of
2 securing includes releasably attaching proximal ends of the outer and inner members,
3 respectively, to a handpiece for rotating the inner member within the outer member.

1 51. The method of variably positioning recited in claim 50 and further
2 including the steps of moving the inner member proximally within the outer member
3 from the maximum insertion distance, moving the outer member from the longitudinally
4 extended position to the longitudinally retracted position, releasing the distal tip to
5 permit relative rotation between the distal tip and the body about the central longitudinal
6 axis from the selected directional position in response to said step of moving, effecting
7 relative rotation between the distal tip and the body about the central longitudinal axis
8 with the distal tip in the longitudinally retracted position to move the cutting window to
9 another selected directional position about the central longitudinal axis, advancing the
10 inner member distally within the outer member with the cutting window in the another
11 selected directional position to move the outer member from the longitudinally retracted
12 position to the longitudinally extended position, and preventing relative rotation
13 between the distal tip and the body about the central longitudinal axis in response to
14 said step of advancing.